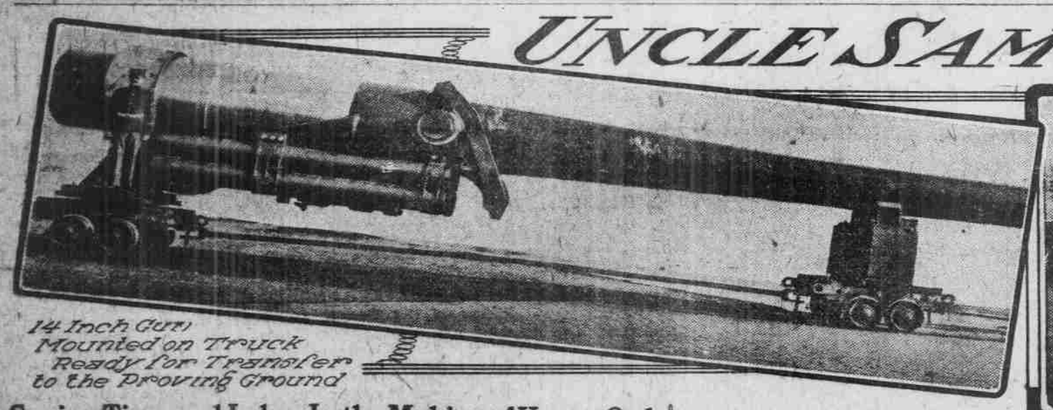
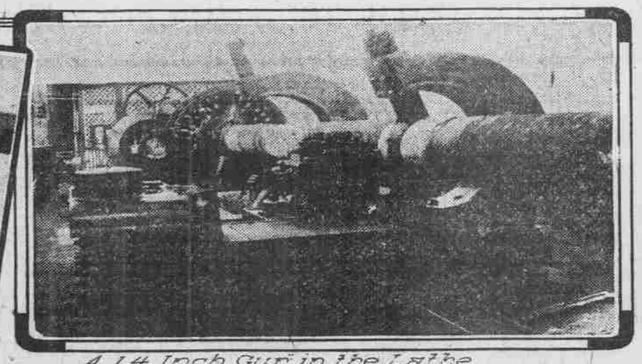
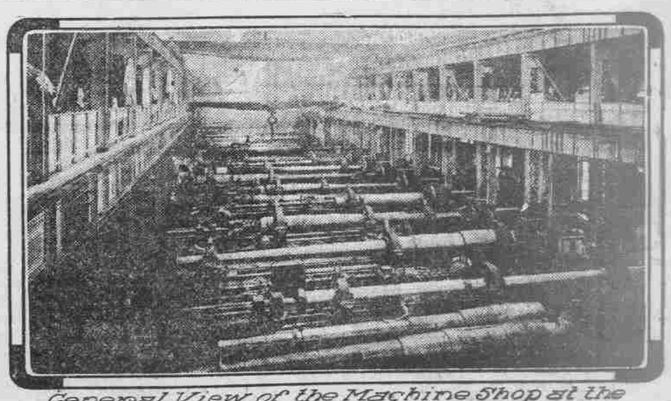
UNCLE SAM'S BIG GUNS



14 Inch Gun Mounted on Truck Ready for Transfer to the Proving Ground



A 14 Inch Gun in the Lathe



General View of the Machine Shop at the U.S. Naval Gun Factory

Saving Time and Labor In the Making of Heavy Ordnance -- Lessons of the Present War Taken To Heart In Gun Making -- Cooperation Between Private Plants and Government Workshops -- Tricks of the Trade.

BY WALDON FAWCETT.

YOUR up-and-doing Yankee has proven for some months that he is a Johnny-on-the-spot when it comes to supplying any power in need with arms and ammunition. But how many good Americans realize—whether they favor such exports or not—that this playing of the role of armorer to the world at large is likely to work out mightily to the good of the Republic should this nation ever be called upon to defend itself against a foreign foe. Next to being armed to the teeth there is nothing like knowing where to lay hands on weapons when they are needed.

By and large, the United States is a bit backward on the score of military and naval preparedness but it is a safe guess that ere the carnage in Europe comes to an end we will lead the world in the possession of munitions plants, privately and publicly owned. Already we have establishments that have quietly expanded until they overshadow in size and output the famous Krupp works in Germany of which we have heard so much since the beginning of this war.

Uncle Sam has nothing to do with the export of American-made war equipment to Europe any more than he has with any other private business, but he is mightily concerned about obtaining an adequate supply of "peacemakers," as the biggest guns are sometimes called, with which to outfit his ships and seacoast defenses. Hence the desire of the government to work in more or less close harmony with the great steel plants of the country. The War Department and the Navy Department have gun shops that rival the plants of any power on earth but wonderful as these are they are not qualified to perform every function in the transformation of iron ore into 14-inch guns. Thus it has been the custom to purchase forgings from commercial steel plants and leave it to Uncle Sam's own workmen to put on the finishing touches—indeed to perform all the painstaking and exacting operations of gun making.

A Quickened Demand For Big Guns In The United States.

The lessons of the Old World war have all taught us, the least protected of nations, to lay in a stock of the largest shooting irons, and to be quick about it, too. Plenty of supposedly sound theories have been turned topsy-turvy since a year ago last August but almost everything that has transpired on Europe's three battlefronts has gone to prove that the big gun, far from being an obsolete tool of warfare, is today the chief dependency of the fighters.

The development of our latest naval fad—the "all big gun" ship has, of course, whetted the Governmental appetite for big guns. According to this fashion the up-to-date battleship has a main battery of 8 to 12 guns of the largest calibre, in contrast to the modest showing of the type of battleship that we were so proud of at the beginning of the century, a style of floating fortress that was accounted invincible with her four turret guns, two aft and two forward. Even though our naval arbiters are taking to heart the moral of the present war that speed is a mighty important thing in a naval vessel, be it a craft of the largest and heaviest class, it is proposed to seek to get this speed without giving up the big guns. Indeed, the quest of the hour is for that ideal compromise a vessel that will have the speed of a cruiser but the hitting power of a ponderous battleship.

Rapid Progress In Gun-Making.

If the recent story of American gun making is a chronicle of short cuts to efficiency so might it also be said that the whole modern history of Yankee ordnance manufacture has involved an advance by leaps and bounds. As late as the year 1884 the United States was entirely destitute of modern artillery and, worse yet, lacked the means of manufacturing it. Then, all of a sudden, the powers that be finally got busy and the President sent abroad a board of army and navy officers who were told to find out how our cousins on the other side of the Atlantic managed their gun making.

The establishment of Uncle Sam's two foremost gun factories may be traced to the activities of these globe-trotting ordnance inquisitors. They visited Russia, France and England and as a result of their recommendations the Government made the beginnings of the great naval gun factory on the banks of the Potomac river, at Washington, D. C., and the big ordnance manufactory at Watervliet on the Hudson. As a sort of "annex" to the big gun factory at the national capital is the "proving ground", located at Indian Head, Maryland, to which the big guns are conveyed by voyage of two dozen miles down the Potomac in order that they may be formally tried out ere they are placed on permanent sentry duty afloat or ashore.

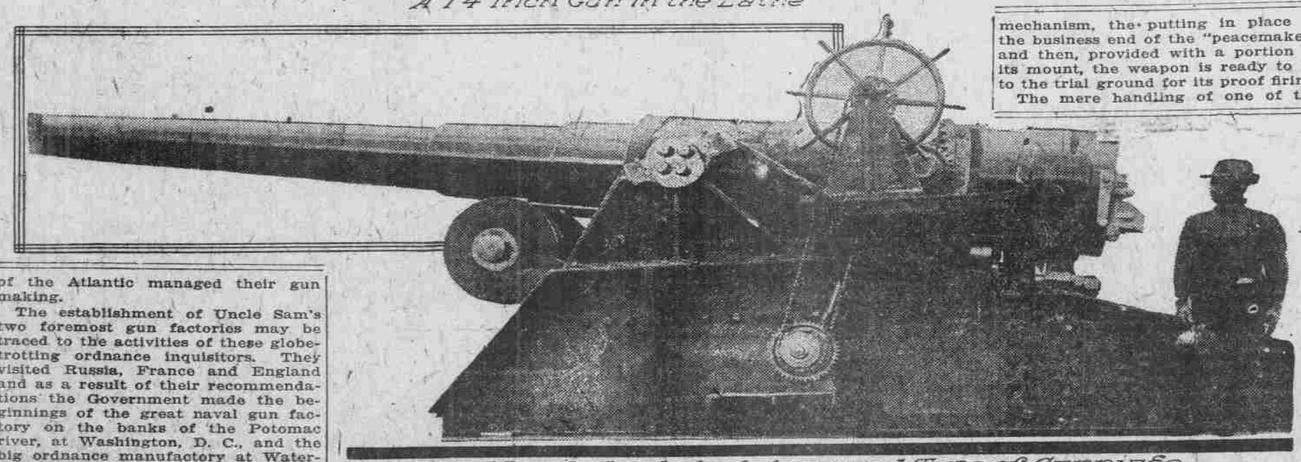
The buildings at Washington cover forty-seven acres and they are constantly being augmented, as witness the provision last year of a new foundry that is up-to-date in all respects and capable of turning out castings of the largest size in steel, cast iron and bronze.

Building Up A Thunderer.

Perchance every reader of this has heard of the wonders of the shrinking process in big gun making when a 16-ton metal "jacket" is fitted within four one-hundredths of an inch over a tube and welded by shrinkage, and yet this masterpiece of delicate work executed by asbestos-gloved workmen is merely the most spectacular feature of a series of industrial processes, every one of which is a marvel in its way. The operations of turning and boring might impress the chance visitor almost as deeply did he realize how a miscalculation of a fraction of an inch would play havoc with the tedious lathe work that extends over hours and days.

All modern guns of large size are what are known as "built-up" guns. Unlike the crude cannon of our forefathers, the twentieth century thunderer is not made of a solid piece of metal but is "built," literally as well as figuratively, by shrinking around a central tube or foundation tube various layers of massive steel sheathing known as "hoops." Most important of these hoops is the one known as the jacket, which is immediately over the rear end of the tube and extends well forward on it, thus bearing the brunt of the force of the explosion when powder charges are fired in the completed gun.

The first step in the "building up" or assembling of a big gun comes with the placing of the tube in a shrinking pit where it is to receive the "jacket" and other hoops. There is no such thing as hurrying in this part of the proceedings for an interval of thirty hours is required to heat a 14-inch jacket to the temperature of 825 degrees F. that is deemed necessary to insure its shrinkage with a grip that will prove everlasting. Then there must be allowed a liberal interval for cooling. After this the same



Gun Mounted on Latest Approved Type of Carriage

mechanism, the putting in place of the business end of the "peacemaker" and then, provided with a portion of its mount, the weapon is ready to go to the trial ground for its proof firing.

The mere handling of one of the shooters upon which Uncle Sam relies to enforce respect is no mean chore, as may be surmised from the fact that our standard heavy gun, the 14-inch, has a length of 54 feet and weighs more than 63 tons. Why, the shell which such a gun fires—hurls to a distance of 21,000 yards—has a weight of 1,400 pounds. But the introduction of powerful electrically operated cranes has provided a short cut over all old-time methods of handling the guns completed or in process of manufacture. These huge burden bearers pick up the guns and swing them thither and thither indoors and out with an ease that is awe-inspiring and yet there is delicacy as well as method in their madness as is attested by the fact that when it comes to the shrinking operation the largest of the cranes proves itself capable of not only centering its many-ton burden within one thirty-second of an inch, but lowers it with fine deliberation at the rate of one foot per minute.

Finishing The Gun A Ticklish Task.

That Uncle Sam has been able this past few years to speed up the manufacture of monster guns is the more remarkable when we stop to consider that the task of finishing such a gun is almost as ticklish as the assembling process already referred to. For one thing, the assembled gun must be put in a lathe and the bore brought down to a diameter exact to the fraction of an inch. Chambering is another painstaking operation, and then comes rifling which consists in cutting spiral grooves in the surface of the bore right up to the muzzle in order to give each projectile a desired twist as it leaves the gun.

Finish-turning gives the big gun that neat, business-like appearance that so impresses the innocent bystander when he sees one of these weapons mounted and ready for action. By means of the huge lathes that play so conspicuous a part in gun making the outside of the gun is smoothed off and the muzzle is given its distinctive bell-like flare. After that comes the fitting of the breech

Short Cuts In Rebuilding Guns.

While Uncle Sam has been saving steps and minutes at this stage and that of the gun making process it must be confessed that the greatest economics have been attained in rebuilding guns. Perhaps you had not heard that it is the custom to rebuild the big guns. Fact though; guns are "rebuilt" much as automobiles and typewriters are rebuilt and the procedure is every bit as important in its way as the manufacture of new guns, because it keeps old guns in service which is of course better than relying solely upon new ones when your need is urgent. No wonder, then, we take off our hats to the new process which enables Uncle Sam to rebuild a gun in precisely twenty-five days instead of requiring an interval of seventy-five days, as it formerly did, to renew the youth of one of our protectors.

If we may judge from the tests which have been made, modern high-powered guns using smokeless powder—the kind that Uncle Sam manufactures and uses—have almost unlimited life under normal conditions. That is, the gun itself does not wear out but they erode in the bore very rapidly owing to the high powder pressures which they must sustain and the consequent high temperatures to which they are subjected. This is the explanation of why it pays so well to prolong the life of a big gun by relining the weapon or renewing the bore. The process of rejuvenating our heavy ordnance has been tremendously facilitated by the practice in recent years of building all such guns with conical liners susceptible of easy removal. This has done more than anything else to cut down the time required to give a gun new insides.

The shrinking pot, that inferno of the gun makers, is used in relining a gun even as it is in shrinking on the "jacket" of a new gun. It is just here, indeed, that the conical "liner" proves its superiority over the cylindrical liner which has lately become obsolete. The cylindrical liner when it was worn out had to be removed by boring, a tedious process of cutting that involved great loss of time and labor. In the case of a gun with a worn-out conical liner, however, the process is speedy and simple. The gun is placed in the shrinking pit and heated to a temperature of about 500 degrees. Then cold water is poured through the liner with the result that it cools suddenly and contracts as it cools in consequence of which it drops out. Of course, the gun must be heated again to insert the new liner, but when the new lining is in place the mass of metal is allowed to take its own time to cool, no water being sprayed on. After the reconstructed gun is thoroughly cooled it is chambered, rifled and finished.

Alaska's Peculiar Indians

Uncertain Origin of the Alaska Aborigines-Their Manners and Customs Wholly Different From the Redskins of the West

THE Alaskan Indian is so unlike the Red Man of our great West that he is probably of a different racial stock. Many students of ethnology claim that these queer people of the North are of Asiatic origin from the fact that their skilful carvings and method of weaving indicate that at some time or other they must have been in contact with the Japanese race—even the features of the Chilkat tribe bear a striking resemblance to those of the little Brown Men of the Orient. According to Washington Irving a Japanese junk was wrecked off Queen Charlotte's Island in 1833, and with two exceptions the crew either died of starvation or met a worse fate at the hands of the cannibal natives. If one boat came from Japan there is every reason to believe that others may have crossed the Pacific years before. The topography of the country is such that in order to reach the section in which they now live in coming from the East wide rivers would have to be crossed and the heights of the rocky coast range scaled. Even with these obstacles many students of Indian life claim that they went there from a more eastern locality rather than from Japan. However, they are in Alaska, with manners and customs entirely different from any of the tribes of the States.

After the coming of the White Man, and especially after the Klondike rush, the Indians began to decrease, and the number of them has been reduced fully thirty per cent by death. There are numerous deserted villages where these people once lived strong and healthy, subsisting on game and wild fruits and wearing warm furs throughout the cold season. Now they have for the most part discarded their picturesque blankets and animal skin robes for gaudy, ill-fitting American clothes of an inferior quality. Pneumonia is common among them, being easily contracted from lack of suitable winter clothing. Consumption has played havoc in their ranks, and a contagious disease such as measles or diphtheria soon becomes epidemic from their ignorance as to its proper treatment. The shaman or medicine man still practices his incantations, and the mortality in some sections has been appalling.

Various Tribes.

The Indians are known under the general name of Thlinkets, and are divided into tribes called the Chilkats, Stickenes, Yakutats, Haidaho, Aleuts and Auks. There is nothing picturesque in either the dress or the make-up of the squaws. The former usually consists of a dirty calico or worsted dress, a greasy looking shawl and a highly colored handkerchief tied over the head. Many of them still cling to their moccasins. The labret or lip ornament is fast disappearing, but there is one woman in Wrangle who still wears it. She appears to be about ninety years of age, although the tourist is told she is one hundred and ten. This hideous face decoration is peculiar to the Alaska Indians.

Ak Indian Squaws with their Peculiar Painted Faces

Aged Indian Woman Wearing Labret Lip Ornament

Home of an Alaskan Indian Chief

Indian Newsboys at Ketchikan

Indian Squaws who bear a Resemblance to Japanese

Queer Styles.

An incision is made in the chin just below the lip and a piece of green wood forced into the hole. The wood swells and when the opening has healed the laboret—a piece of abalone shell or sometimes common glass about the size of a small spool, is forced into the opening. The weight often pulls the lip down, disclosing ragged teeth. But the laboret was at one time a mark of wealth and universally worn. Rings through the nose were also in fashion among both sexes, but this custom has entirely disappeared. Cheap American jewelry has taken the place of these once prized ornaments and fancy bracelets and rings with colored glass setting adorn the arms and hands of the squaws.

Women Have Rights.

The ambitions of the suffragists have been carried to the fullest extremes among the Alaskan Indians. The women do all the bartering and trading, and the children take the crests of their mothers—indeed, the members of the father's family are only regarded as distant relatives. A man's heir is not his son but his sister's sons. This makes a complicated system of relationship but one that tends to create hospitality among the tribes. Totem poles are the city directory of Indian villages, as a strange Indian entering the village will consult the totems to find his relatives, as these carved poles show the family tree.

The Alaska Indians are stolid creatures, but the sight of a camera will cause a perfect stampede to cover. The women sit about the streets of the towns offering baskets, moccasins and trinkets for sale. Their babies are often in their laps, yet they rarely disturb their mothers by crying, and if they should the mothers have the "bogey man" story ready to frighten them. The Indians are of a naturally superstitious nature and they tell the legend of the "bogey man" with all the reverence in the world and point out a totem in one of their villages to prove his existence. This pole is surmounted by the whitened face of a European flanked on either side by a child wearing a high hat. As the legend runs, a chief's wife and her two children went out to gather spruce boughs for holding salmon eggs. She left the children in the canoe, telling them to remain there until she came back, but they were disobedient and wandered away. She called and called but only the crows answered, and finally a spirit told her that a white man had carried the youngsters away—and this is supposed to happen to the disobedient little Alaska Indian. This legend is not unlike those to be found in the folk lore of the Maoris of New Zealand.

The native women, especially in Southeastern Alaska, are shrewd bargainers and the traveller sometimes has artificially colored old ivory and furs sold to him instead of the genuine. The boiling of a walrus tusk in seal oil will give it the color of rare old ivory, and the rubbing of lamp black into furs improves the appearance of the hide, so the stranger in Alaska will do well to rub the fur before purchasing.

Baskets Real Treasures

Their baskets are sometimes genuine treasures. Weeks are consumed in making half a dozen, as the weaver must first make the fibres. These are usually made of spruce tree roots interwoven with blades of grass colored by a vegetable dye prepared by a process known only to themselves. The grass is gathered by the natives in the lagoons. The root gathering takes the form of a picnic, as the women carry their cooking utensils and go out to camp in the woods for several days. The roots gathered are scraped, parboiled, and then left in a pan of water for two or three weeks. The oldest squaw in camp decides when the root is sufficiently pliable for working. The next process is to remove the fibrous tendrils from the parent roots by the aid of a curious shaped knife. One end is then attached to a stick set firmly in the ground. The slim root is then polished and the weaving commenced by starting at the bottom of the basket, held in place by two sticks while the sides are built up. All baskets are carefully wrapped in cloth during the process of manufacture to keep them from becoming soiled. The most beautiful ones come from Attu, a small island of the Aleutian chain. These are made of fine straw with richly colored strands of silk woven through them.

The birch bark basket, too, is of Alaska Indian origin. At Point Barrow some of the baskets are decorated with fur, ivory or reindeer hide, while others made from the roots of cedar trees are ornamented with strips of wild cherry bark. Moccasins made of moose hide or fur seal, heavily lined with squirrel or rabbit skins, are also offered. These make excellent bedroom slippers and have the merit of lasting for years. The squaw does not forget the children and toy baskets and moccasins for dolls are on sale.

Though not industrious and ingenious in art as the women, the men are quite expert in hammering out native copper into articles of usefulness, such as paper knives or spoons, or in making a pretty bracelet from a silver dollar by the same process.

Famous Blankets.

The Chilkats who live near the Lynn Canal weave blankets which show remarkable artistic taste, giving to the work an unusual value. Until a few years ago these blankets were the distinctive ceremonial robes of the native tribes of Southeastern Alaska. They are made of the wool of mountain sheep and are gorgeous in the exquisite blending of the colors, and are worth from seventy-five to two hundred dollars. The Chilkats are also skilful in carving on stone and goats' horns. The Indians are great imitators, and while they retain their own ideas as to the figures they carve they will frequently copy a picture of the President of the United States on a walrus tusk or on mastodon ivory.

The Alaska Indians are for the most part hospitable and polite, and these virtues grow as one travels farther north. Many times they have saved the gold hunter from starvation by sharing their last morsel of food with the "white brother." They love to copy the white man's ways and be his friend. The few negroes who came into the mining districts during the rush were objects of the greatest interest to the Indians and they finally gave the Sons of Ham the name of "pale-man-afraid-to-wash-his-face."

Legend Of The Mosquito.

Their legends are almost innumerable, but the one of the mosquito seems most reasonable, especially when one is suffering from the stings of that insect. As told by an Indian, it runs as follows: "Once upon a time there was a wicked spirit who took the form of a huge spider and who would swoop down and suck the life blood from men's bodies, leaving them like the empty shells of the flies which have been sucked by the spider. Men suffered long and their cries aroused the sympathy of the good spirit, who built a great fire and pushed the spider into it. Being immortal, the wicked spirit could not be wholly destroyed, so he shrivelled and shrivelled until he became a tiny insect and in this shape escaped from the fire and has ever since enjoyed tormenting people in the form of a mosquito, singing as he stings and dropping into the wound an infinitesimal coal from the fire in which he nearly perished."

According to Indian tradition they all, at one time lived in a beautiful land where there was abundance of hunting. Then the flood came which swept over the earth. After it had subsided the boats rested on the hunting grounds—some where fish abounded, others where there were bears or wolves, and from these fish and animals they took their new crests. They settled on the land where their boats came to rest and formed a new tribal relation.

Each tribe has its particular ceremonial over the dead. The Indians of the far North wrap their dead in canvas or other covering and raise them on a scaffold to protect them from wild animals. Several tribes of Southeastern Alaska practice a crude sort of cremation, and after burying the ashes leave the effects of the deceased in a box on top of the grave. These graves are never robbed. When a chief dies his body is laid out in state with all his belongings spread about him. He is dressed in his royal raiment and placed on a bed of state with blankets draped around the room. Food is provided for the mourners who come in large numbers. His gun is always placed upon his grave.